Focus on International Joint Commission Activities

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# Focus on International Joint Commission Activities (ISSN 0832-6673): vol.14 iss.1

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FOCUS
On International Joint Commission Activities

# IJC Releases Its Fourth Biennial Report on Progress Under the Great Lakes Water Quality Agreement

The 1978 Great Lakes Water Quality Agreement requires the International Joint Commission (IJC) to make a full report at least every two years to the Governments of the United States and Canada and to state and provincial governments concerning progress to accomplish the goals of the Agreement.

To assist the IJC in completing this requirement, its two advisory boards for Great Lakes water quality issues — the Water Quality and Science Advisory Boards — present their own reports to the Commission. The Commission holds biennial meetings to receive these reports from the boards, and to obtain comments from the public concerning progress under the Agreement. It then completes its own analysis of such progress, and submits its biennial report to Governments. The Fourth Biennial Report thus completes the process initiated with the boards' 1987 reports and the 1987 Biennial meeting held in Toledo, Ohio.

Although considerable progress has been made and a shift of emphasis to controlling inputs of toxic chemicals is evident, the Commission concludes in its report that the goal of "virtual elimination" of inputs of persistent toxic substances into the Great Lakes remains an unmet challenge. Many locations in the Great Lakes ecosystem do not meet the Agreement's General and Specific Objectives.

The 1987 Protocol amending the 1978 Great Lakes Water Quality Agreement incorporated many of the recommendations made in the IJC's Third Biennial Report, and contains specific commitments to strengthen efforts which deal with the continuing contamination of the lakes. The Commission concludes that the additional annexes for nonpoint sources, contaminated sediments, airborne toxic substances and contaminated groundwater, as well as the annex incorporating the development and implementation of remedial action plans for Areas of Concern and lakewide managment plans, are welcome additions that will build on the work already initiated.

The Commission points out several areas in its report in which greater efforts are needed to address specific water quality problems. The cause and possible impacts of excessive levels of nitrate + nitrite needs to be determined, as well as the presence and quantity of persistent toxic substances in point source effluents. While significant improvements have been achieved in reducing phosphorus target loadings from municipal and industrial sources, some facilities still do not meet the 1 mg/l effluent requirement.

The report also addresses other issues such as nonpoint pollution programs, contaminated sediments, the introduction of exotic species to the Great Lakes from the discharge of ballast water of ships, monitoring and surveillance, human health, radioactivity, and availability of accurate and

## *Inside...*

timely data. The last chapter emphasizes the need to anticipate and prevent future problems, rather than react to present issues, and the need for adaptive strategies to deal with an uncertain future. Thirty-seven recommendations to Governments address these and other issues facing the Great Lakes Basin Ecosystem.

For English or French copies of the Fourth Biennial Report and its Executive Summary, contact one of the IJC offices: in Ottawa at 100 Metcalfe, 18th floor, Ottawa, ON K1P 5M1, (613)995-2984; in Washington at 2001 S Street NW, Washington, DC 20440, (202)673-6222; and in Windsor at 100 Ouellette Avenue, Eighth floor, Windsor, ON N9A 6T3, (519)256-7821 or P.O. Box 32869, Detroit, MI 48232, (313)226-2170.

# Hamilton is Site of IJC's 1989 Biennial Meeting

Hamilton, Ontario will be the site of the International Joint Commission's (IJC) Biennial Meeting on Great Lakes Water Quality from October 11 to 14, 1989. The IJC hosts these meetings every two years for three primary purposes: to provide an opportunity for the Great Lakes Water Quality and Science Advisory Boards to present their reports and for the Commission to question and discuss the boards' reports in a public setting. It also allows other organizations and the public to present their comments on the board reports and progress under the Great Lakes Water Quality Agreement to the Commission.

While the majority of the scheduled events will take place at the Hamilton Convention Centre, a number of regional tours — including Hamilton harbour — and activities are planned. After an opening reception Wednesday evening, the Water Quality and Science Advisory Board will present highlights of their 1989 reports to the Commission Thursday morning. Great Lakes organizations and institutions, elected officials, industry and government representatives, and citizens are invited to present their comments Thursday afternoon and evening. Workshops on health issues, remedial action plans for Areas of Concern, and the future of the Great Lakes ecosystem are scheduled for Friday morning, followed by a plenary session and tour of Hamilton Harbour that afternoon.

The meeting ends with a day-long session on Great Lakes levels Saturday, October 14. Registration materials and a more complete outline of the meeting's events will be included in the July/August issue of Focus. We look forward to seeing you there!

International Joint Commission
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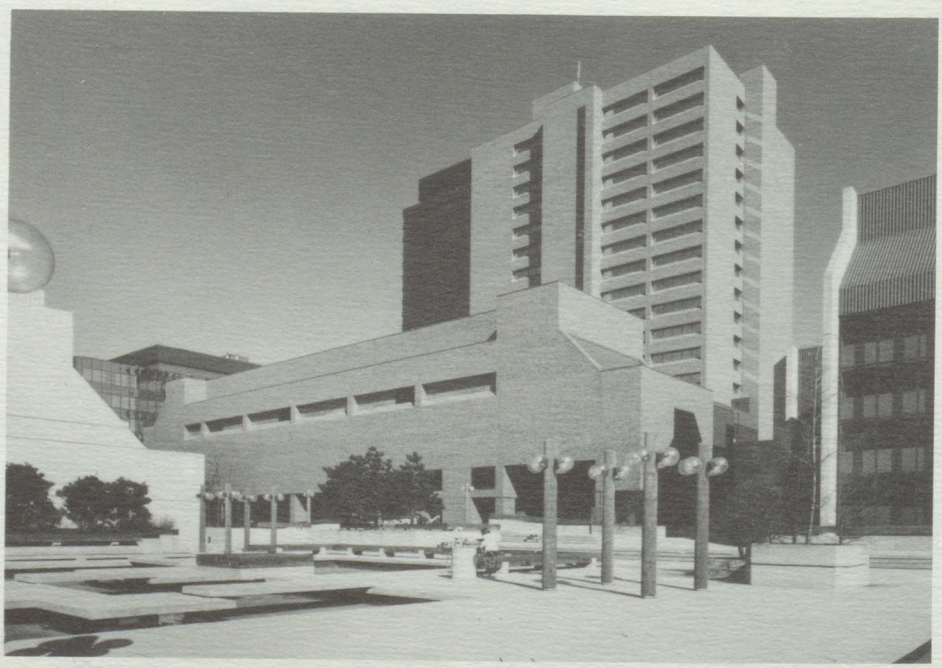


# IJC Releases Final Report on the Flathead River Basin

*by Geoffrey Thornburn*

The International Joint Commission (IJC) has reported to the Governments of the United States and Canada concerning its investigation of transboundary impacts of a proposed open-pit coal mine in the Flathead River basin. The river flows from the southeastern corner of British Columbia into Montana.

*North fork of the Flathead River, courtesy of the Montana Department of Fish, Wildlife and Parks*

The details of the technical studies completed in mid-1988 by the Commission's Flathead River International Study Board and of the public hearings can be found in the November/December 1988 issue of *Focus*, on page two. The report of the board and its committees, together with the submissions received during the public consultation process and the Commission's own investigation of the issues, formed the basis for the conclusions and recommendations contained in the report.

In its report, the Commission notes that while there were several points on which the board reached consensus on the basis of available data and professional judgment, there were a number of other aspects where uncertainty still exists. The Commission states that it is not apparent that some of the uncertainties would be sufficiently alleviated with additional data, while others

could never be totally resolved.

One critical aspect of the proposed mine is that it would be astride two streams that form a significant component of the habitat for prime game fish, most critically for bull trout. The Commission concludes that damage will inevitably occur to this habitat and to the fishery dependent on it. Since the Boundary Waters Treaty does not require that pollution itself cross the boundary, but rather that water that crosses the boundary shall not be polluted in one country to the injury of health or property in the other, the Commission further concludes that the consequences to the fishery would constitute a breach of the Treaty. It also notes in its report that there is a mutual obligation to protect such a fishery that migrates between the countries to ensure that the Treaty will be jointly honored.

***"The Commission states its belief that when any proposed development project has been shown to create an identified risk of a transboundary impact in contravention of the Treaty, existence of that risk should be sufficient to prevent the development from proceeding."***

The Commission states its belief that when any proposed development project has been shown to create an identified risk of a transboundary impact in contravention of the Treaty, existence of that risk should be sufficient to prevent the development from proceeding. Because of the risks and the sensitivity of uses downstream (including Glacier National Park) to environmental changes, the Commission considers the mine proposal to be such a case. In the last section of the report, the Commission points to recent experience in, and the benefits of the two countries entering into, creative and cooperative arrangements concerning alternative development opportunities that are both sustainable and consistent with maintaining environmental requirements pertinent to the Treaty provisions.

In conclusion, the Commission recommends the following in its report in order that governments can ensure that the Treaty provisions are honored:

1. the mine proposal as presently defined and understood not be approved;

2. the mine proposal not receive regulatory approval in the future unless and until it can be demonstrated that:
   - the potential transboundary impacts identified in the report of the Flathead River International Study Board have been determined with reasonable certainty and constitute a level of risk acceptable to both governments, and
   - the potential impacts on the sport fish populations and habitat in the Flathead River system would not occur or could be fully mitigated in an effective and assured manner.

3. The Governments of Canada and the United States consider, with appropriate jurisdictions, opportunities for defining and implementing compatible, equitable and sustainable development activities and management strategies in the upper Flathead River basin.

Copies of the report, *Impacts of a Proposed Coal Mine in the Flathead River Basin*, are available in English or French from the Commission offices in Ottawa, Ontario and Washington, D.C. Contact the International Joint Commission at 100 Metcalfe, 18th floor, Ottawa, ON K1P 5M1, (613)995-2984 or 2001 S Street NW, Washington, DC 20440, (202)673-6222.

# Commission Finalizes its RAP Review Process

*by John Hartig*

In the 1987 Protocol to the Great Lakes Water Quality Agreement, the International Joint Commission (IJC) was given the responsibility to review and comment on remedial action plans (RAPs) for Areas of Concern in the Great Lakes Basin. The revised Agreement states that RAPs shall be submitted to the IJC for review and comment at three stages:

- When a definition of the problem has been completed.
- When remedial and regulatory measures have been selected.
- When monitoring indicates that impaired beneficial uses have been restored.

The Great Lakes Water Quality Board (WQB), as the principal advisor to the IJC, will coordinate the technical review of RAPs for the Commission. The Board's Restoration Subcommittee will facilitate the reviews on behalf of the WQB by distributing each plan for independent review to selected members of WQB subcommittees, the Great Lakes Science Advisory Board (SAB) and the Great Lakes Fishery Commission.

Once a RAP has been reviewed, the Restoration Subcommittee will prepare a summary report of all review comments, with all individual reviews appended so that no information is lost and the IJC has the benefit of each individual review. The Restoration Subcommittee will then transmit the RAP review summary report through the Water Quality Programs Committee to the WQB for discussion, revision and concurrence. The WQB will then transmit the RAP review summary report to the IJC.

The Commission will review the submitted report and determine what additional information is needed, if any, in order to make comments about the RAP to the Parties. While the Commission presumes that the Boards' reviews will be an adequate and thorough assessment of the technical, regulatory and scientific aspects of the plan, it may wish to request additional reviews from other sources in exceptional cases such as where the Water Quality Board has identified unknowns or differences between reviews.

When all relevant reviews have been received by the Commission, it will consider each RAP and the reviews according to the following general criteria, recognizing that these criteria may change according to particular RAP needs.

- Are the advice received and the RAP itself consistent with Agreement requirements?
- Are there discrepancies among sources of advice? How should each of these be resolved?
- Do additional policy dimensions require attention?
- Are the reviews and advice consistent with other RAP reviews?
- Has the public consultation process been adequate?

The Commission will then submit its comments, and associated reviews as deemed appropriate, to the two federal governments and respective jurisdictions.

This entire RAP review process is summarized below. It makes complementary use of the WQB's Protocol for Review of RAPs (see following outline and previous version in Focus, volume 12, issue 1, page 7) and the SAB's Guidelines for Review of RAPs, which is also presented below.

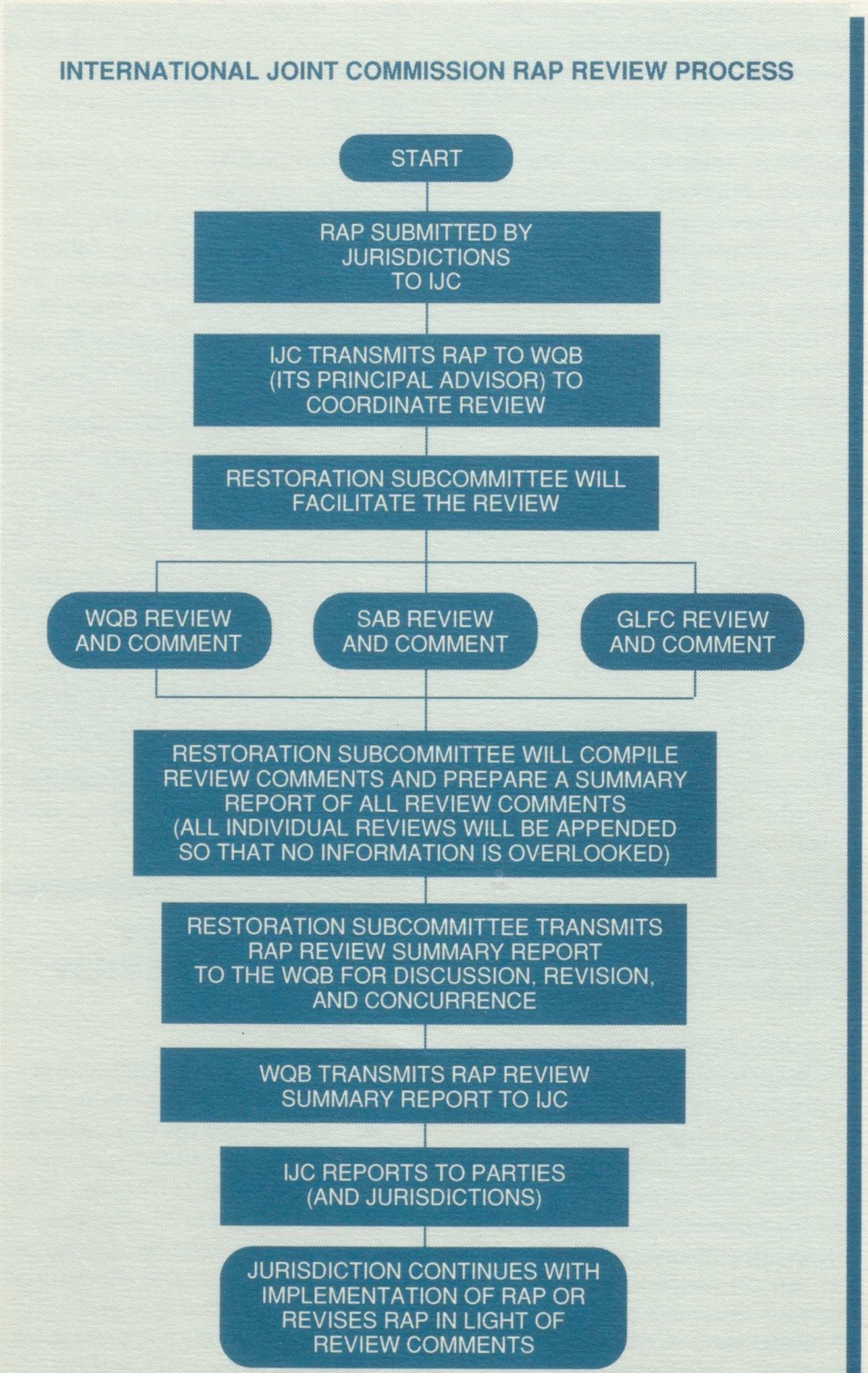
Collectively, the individual reviews, performed as part of this process, should give the IJC the best possible advice on each remedial action plan.

For more information about the Commission's review of remedial action plans, contact John Hartig, IJC Great Lakes Regional Office, 100 Ouellette Avenue, Eighth floor, Windsor, ON N9A 6T3 *or* P.O. Box 32869, Detroit, MI 48232. In Canada call (519)256-7821 or in the U.S. call (313)226-2170.

## WATER QUALITY BOARD RAP REVIEW PROCESS

The goal of Remedial Action Plans (RAPs) is to define the actions and the timetables to restore all impaired beneficial uses identified in Areas of Concern. Restoration of uses is to be achieved through implementation of programs and measures to control sources and remediate environmental problems. The jurisdictions are responsible for preparation of the RAPs and the International Joint Commission (IJC), in its advisory capacity, will track

Focus on International Joint Commission Activities, Vol. 14 [1989], Iss. 1, Art. 1




their development, evaluate their adequacy to restore beneficial uses, and track implementation. Coordination will be provided by the Water Quality Board. The IJC wishes to ensure that its reviews are impartial, properly focused, and consistent for all RAPs.

The purpose of the three-stage review process is to evaluate each RAP for efficacy to abate sources/inputs, resolve identified pollution problems, and restore beneficial uses. The review should provide constructive criticism and advice. Again, each RAP will be submitted to the IJC for review and comment at three stages. Specific questions to be answered at each stage of the review include:

## Stage 1: Adequacy of problem definition

- Have the environmental problems in the Areas of Concern been adequately described, including identifying beneficial uses impaired, the degree of impairment and the geographic extent of such impairment?
- Has there been identification of specific objectives of the Agreement that are exceeded to the extent that such failure has caused or is likely to cause impairment of beneficial uses, including the area's ability to support aquatic life?
- Have the causes of the use impairment been identified, including a description of all known sources of pollutants involved and an evaluation of other possible sources?

### Stage 2: Identification of remedial and regulatory measures

- Are the goals and objectives clear and precise? Are they consistent with the general and specific objectives of the Great Lakes Water Quality Agreement?
- Have remedial measures in place been evaluated?
- Have alternative, additional remedial measures to restore beneficial uses been evaluated?
- Have additional remedial measures to restore beneficial uses been identified, including a schedule for implementation? What beneficial uses (if any) will not be restored? Does the RAP indicate why?
- Have work plans and resource commitments been made?
- Has the surveillance and monitoring program to track effectiveness of remedial actions and confirmation of beneficial uses been adequately described?
- Have the persons or agencies responsible for implemention been identified? Have the beneficiaries or organizations impacted by the RAP been identified? Has there been adequate opportunity for consultation with the public?

### Stage 3: Restoration of beneficial uses

- Have all identified remedial measures to restore beneficial uses been implemented according to the schedule in the RAP? If not, why?
- Do surveillance and monitoring data confirm restoration of beneficial uses? If not, why?

The RAP reviewers have the option to meet with reviewers and the jurisdictional RAP coordinators to answer questions and help to ensure consistency. The review coordinator, for each of the three stages, will then prepare a summary report of all the reviews for tabling and discussion by the Water Quality Board's Programs Committee. Collectively, as a review team, it should be possible to answer all questions, even though individual reviewers may not have the expertise to answer all questions. The review coordinator is responsible to ensure that all questions are answered.

The jurisdiction has the option to revise the RAP, in light of the review comments, before further consideration by the Water Quality Board and the IJC. Once this process has been completed, the review coordinator will present the RAP and the summary report of review comments to the Water Quality Board at the completion of each of the three stages. The Water Quality Board can, at its discretion, transmit the RAP, the summary report of review comments, and advice to the International Joint Commission. Alternatively, the Water Quality Board may advise the jurisdiction to review its submission in light of the review comments before the Water Quality Board tenders the RAP, its report, and its advice to the IJC.

The Board will report semi-annually on the status of RAP development and implementation to the Commission. All RAPs, review comments and relevant background documentation for each Area of Concern will be maintained in an archive at the Commission's Great Lakes Regional Office.

## SCIENCE ADVISORY BOARD GUIDELINES FOR REVIEW OF REMEDIAL ACTION PLANS

The Science Advisory Board review of RAPs is based on an understanding of the fundamental principle agreed to by the Parties in Annex 2 of the 1987 Protocol Revising the 1978 Great Lakes Water Quality Agreement, i.e. "Remedial Action Plans ... shall embody a systematic and comprehensive ecosystem approach to restoring and protecting beneficial uses in Areas of Concern ... ."

Thus, RAPs must consider the demographic, economic and institutional context within which remedial decisions are made, the financial and institutional resources that must be mobilized if remedial action is to occur, and the primary economic and institutional impediments to short-term remediation and sustained long-term protection.

The Board will consider the following questions in its review of each remedial action plan:

- Does the plan embody an ecosystems approach? Have problems and solutions been examined at various levels of integration?
- Are human health effects addressed in a comprehensive manner?
- Have effects been adequately linked to contributing societal causes such as specific private and public sector activities and technological implications?
- Are the remedial actions adequate to sustain the beneficial uses for the foreseeable

future and planning horizon?

- Does the plan provide for public communication and education? Is there provision for timely involvement of the public in the definition of problems, identification of alternative remedies and implementation of preferred approaches?
- Does the plan foster innovative approaches to cooperative problem solving by stakeholder groups?
- Does the plan identify opportunities for the obligation of the private sector to remedy existing problems and prevent future ones? Does the plan identify alternative sanctions and incentives to encourage such private sector activity? Does the plan identify nonenvironmental community objectives that may conflict with attainment of environmental goals identified in the RAP?
- Do studies necessary to complete the RAP comprise a balanced information system of social, technological and ecological elements?
- Is there provision for periodic public review and updating of the RAP by the jurisdictions?
- Does the plan identify opportunities for pollution prevention through the application of clean technology, pretreatment, waste reduction, recycling and land management or other measures?
- Is the report set in an appropriate time frame? e.g. slow processes should be monitored for a long time, as should the consequences of intermittent contamination.


*The Lake Ontario Toxics Management Plan will be implemented jointly by Environment Canada, Ontario MOE, NYSDEC, and U.S. EPA. Credit: U.S. EPA*

# Binational Lake Ontario Toxics Management Plan Unveiled

*by Kevin Bricke*

A binational Coordination Committee consisting of senior managers from Environment Canada, the Ontario Ministry of the Environment, the United States Environmental Protection Agency and the New York State Department of Environmental Conservation (the Four Parties) met in Rochester, New York on February 28, 1989 to adopt a plan to clean up toxic pollutants in Lake Ontario.

Adoption of the plan fulfills a commitment made by the principals of the four participating agencies when they signed a Declaration of Intent on February 4, 1987. Shortly thereafter, the Four Parties formed a Lake Ontario Toxics Committee, under the direction of the existing policy-level Coordination Committee, to develop the plan.

On January 28, 1988, at an open public meeting in Niagara Falls, New York, the Lake Ontario Toxics Committee presented a draft plan to the Coordination Committee. At that meeting, the Coordination Committee directed the Lake Ontario Toxics Committee to:

- Pursue an aggressive public outreach effort to ascertain the public's views on the draft plan; and
- Continue its efforts to develop supplemental information and data to improve the plan.

The initial public outreach effort has been completed, supplemental information and data have been generated, and the results of these efforts are reflected in the Lake Ontario Toxics Management Plan and its accompanying Public Responsiveness Document.

Toxics in Lake Ontario are a human health concern, for several reasons:

- Certain toxics (PCBs, mirex, chlordane, dioxin, mercury, hexachlorobenzene, DDT and its metabolites, and dieldrin) bioaccumulate in some Lake Ontario sportfish to levels that make them unsuitable for unrestricted consumption by humans;
- Hexachlorobenzene, DDT and its metabolites, and dieldrin are also found in the surrounding (ambient) water column at levels above standards and criteria designed to protect human health;
- No toxics, however, are found in drinking water at levels above standards designed to protect human health;
- Generally accepted direct indicators of the impact of toxics in Lake Ontario on human health are not currently available.

Toxics in Lake Ontario are also a biotic health concern because:

- They bioaccumulate in fish to levels that make them unsafe for consumption by wildlife;
- PCBs, iron and aluminum are also found in the ambient water column at levels above standards and criteria designed for protection of aquatic life;
- In the past, toxics have clearly been shown to have caused adverse impacts on other biota, such as deformities and reproductive failures in fish-eating birds;
- However, the levels of toxics in Lake Ontario have been reduced over the past two decades. There is some question as to whether the persisting adverse impacts to other biota are linked solely to toxics.

There is clear evidence that the levels of some problem toxics in Lake Ontario biota have been reduced over the past two decades. For example:

- The levels of PCBs, mirex, DDT and its metabolite, dieldrin and hexachlorobenzene in herring gull eggs taken from colonies in Lake Ontario from 1974 to 1986 show significant declines; and
- The levels of PCBs in lake trout, brown trout and coho salmon collected since 1975 show significant declines.

By contrast, the trends in the levels of mirex in Lake Ontario sportfish are not clear. In addition, there is concern that the levels of problem toxics in Lake Ontario biota may be stabilizing at unacceptably high levels.

The goal of the Lake Ontario Toxics Management Plan is a lake that provides drinking water and fish that are safe for unlimited human consumption, and that allows natural reproduction within the ecosystem of the most sensitive native species, such as bald eagles, ospreys, mink and otters. The plan includes four objectives to meet this goal:

- Reductions in toxic inputs driven by existing and developing programs;
- Further reduction in toxic inputs driven by special efforts in geographic Areas of Concern;
- Further reductions in toxic inputs driven by lakewide analyses of pollutant fate; and
- Zero discharge of toxics to the lake.

The plan comprehensively documents the specific activities, outputs, responsible parties and deadlines required to meet these four objectives. For example, the Four Parties have:

- Established a Categorization Committee that will keep the list of problem toxics current; the first updated list will be available in July 1989;
- Established a Standards and Criteria Committee to reconcile differences in chemical-specific standards for toxics; recommendations will be available in July 1989;
- Established a Fate of Toxics Committee to determine the reductions in toxic loadings necessary to achieve chemical-specific standards; preliminary load reduction targets will be available by March 1990;
- Obtained commitments that the Ecosystem Objectives Work Group, currently being established by the United States and Canadian Governments under the Great Lakes Water Quality Agreement, will develop preliminary ecosys tem objectives will be developed for Lake Ontario by February 1990.

The plan was prepared to begin a more substantive dialogue on toxics management in Lake Ontario. The Four Parties will prepare annual status reports and plan updates. The Coordination Committee will continue to meet at least every six months at locations around Lake Ontario to ensure full public accountability in meeting the obligations in the Lake Ontario Toxics Management Plan.

For further information, please contact Kevin Bricke, Chairman, Lake Ontario Toxics Committee, U.S. EPA Region II, 26 Federal Plaza, Room 805, New York, NY 10278. (212)264-2513.

## BRIEFS

The U.S. Environmental Protection Agency (EPA) has proposed regulations that will require 170 cities and an estimated 25,000 industrial facilities to obtain permits to discharge storm water. The regulations would apply to all systems that discharge water from separate storm sewers and does not apply to discharges from sewers that carry both domestic sewage and storm water.

The regulations are meant to control contaminants entering waterways from four major sources: illegal connections, construction site runoff, industrial sites, and commercial and residential areas. The agency held hearings in January and February 1989 in six locations around the country in order to develop these regulations.

For more information or to submit comments on the proposed rules, contact James Gallup, Kevin Weiss or Tom Seaton, Office of Water Enforcement and Permits, U.S. EPA, 401 M Street SW, Washington, DC 20460. (202)475-9518.

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U.S. Fish and Wildlife Service Scientist Michael Mac has pinpointed the chemical polychlorinated biphenyl (PCB) Isomer 77 as a potential reason why naturally reproducing lake trout have not re-established in Lake Michigan. The fish species was almost extinct by the early 1950s due to attacks by the eel-like sea lamprey and commercial overfishing. The federal agency has planted millions of young lake trout in the Great Lakes since 1957 in order to revive a self-sustaining population. While this has generally occurred in lakes Superior and Huron, there has been no success in the more polluted Lake Michigan.

Mac's study found that with higher concentrations in lake trout eggs of PCB Isomer 77, fewer eggs hatched. Eggs with lower levels of the PCB compound had correspondingly higher hatch rates. Other researchers have linked high levels of contaminants in the Great Lakes - including PCB Isomer 77 - to birth defects in birds that feed on the same fish found in the trout's diet. While other factors may also influence the rate of hatching success for lake trout in Lake Michigan, Mac's research could indicate a direct link between a level of environmental contamination and a resulting biological effect.

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**Dr. Donald Mackay**, member of the IJC's Great Lakes Science Advisory Board's Executive Committee and Technological Committee, was presented with the Investigator Award in the area of air pollution research by the Ontario Ministry of the Environment at its ninth Technology Transfer Conference on November 28, 1988. The award is presented annually to selected investigators of Ministry-funded research projects.

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The State of Michigan became the first state to formally contribute its share to the Great Lakes Protection Fund when its citizens voted to approve an $800 million environmental bond issue in the November 1988 elections. The fund was first proposed by members of the Council of Great Lakes Governors, and is planned as a permanent endowment to fund activities implementing the Great Lakes Toxic Substances Agreement signed by the governors in May 1986.

Michigan voters approved $15 million of the bond to be allocated to the state's contribution to the fund. The Council has recently been expanded to include all eight Great Lakes states. It was formed in 1982 by Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin to develop joint economic and water resource policies for the region. New York and Pennsylvania accepted the invitation to become full members of the regional planning body late in 1988.

For further updates on development of the Great Lakes Protection Fund, contact the Council of Great Lakes Governors, 310 S. Michigan Avenue, Tenth floor, Chicago, IL 60604. (312)427-0092.

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The CBC reports that Canadian children may be exposed to harmful levels of lead in school drinking water, exceeding the current Federal Drinking Water Guideline and Ontario Drinking Water Objective of 50 parts per billion (ppb).

The Ontario Ministry of Environment has conducted ongoing studies on lead in drinking water. The overall finding of these studies was that flushed water samples did not contain elevated lead levels; however, standing samples could contain elevated levels, even above the 50 ppb limit.

The Ontario Ministry of Education recommends that a flushing program of five minutes, or until the water issuing from the fountain/tap is cool and of constant temperature, be instituted at all schools where levels of lead are likely to exceed the standard. All Ontario elementary schools will be tested.

To find out if your schools may have elevated lead levels, contact the Assistant Deputy Minister, Wally Beevor, Ontario Ministry of Education, Mowat Block, 900 Bay Street, Twenty-second floor, Queen's Park, Toronto, ON M7A 1L2. (416)965-4232.

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The U.S. Environmental Protection Agency (EPA) is sponsoring the Third Annual President's Environmental Youth Award national competition for students in grades kindergarten through 12. Children in the Great Lakes states of Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin can submit their projects, which must include sponsorship from an adult, to the U.S. EPA, Region V office. Winners from each region will receive an expense-paid trip to Washington, DC to participate in the

Annual National Awards Ceremony in November 1989.

Projects must be received by August 31, 1989 and must meet requirements as described in the application form. To obtain applications and more information contact Patricia Krause, Office of Public Affairs, U.S. EPA, Region V, 230 South Dearborn Street, Chicago, IL 60604. 800-572-2515 in Illinois and 800-621-8431 in Indiana, Michigan, Minnesota, Ohio and Wisconsin.

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New regulations have been established by the New York State Department of Health and adopted by the state's Public Health Council for the concentration of organic chemicals in drinking water. Effective January 9, 1989, a maximum contaminant level of 5 micrograms per liter (ug/l) is established for solvents found commonly in water supplies. Many of these principal organic contaminants have the potential to cause cancer in humans or laboratory animals.

For further details contact Ronald A. Entringer, New York State Department of Health, Bureau of Public Water Supply Protection, 11 University Place, Room 406, Albany, NY 12203. (518)458-6731.

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Following the examples of music concerts to bring awareness to hunger and homelessness, a group of concerned citizens has formed the organization A Quest for Urgent Action (AQUA) ... Clean Water Now. To raise awareness of water pollution problems, AQUA is sponsoring an international art poster competition entitled, "Liquid Expressions." All interested persons can submit a 35 mm slide of their design and a short statement about why they are participating in the project by May 1, 1989 to the organization. The winning artist's design will be printed in a limited edition, hand-screened print in three colors and will be distributed to institutions, corporations and organizations interested in solving water pollution issues.

For competition guidelines contact Ruth Ely, AQUA, 255 West 84th Street, Suite 2C, New York, NY 10024. (212)740-8135.

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Almost 95 people met on the shores of Lake St. Clair in mid-January to discuss and propose a citizen's agenda for cleanup of the Clinton River, one of the 42 Areas of Concern in the Great Lakes basin. After a series of short workshop sessions and panel discussions, the participants developed a series of recommendations concerning Clinton River restoration activities. For example, they concluded that the remedial action plan process is an appropriate mechanism for cleanup, but it must receive adequate funding over the long term to ensure implementation of proposed actions; a locally based institution should be vested with the authority, responsibility and funding to direct implementation; and an active, informed and educated public is essential to success of the planning process. Several public participation activities were specifically sited for potential use in assisting with the Clinton River cleanup process.

For further information about the Clinton River workshop, contact Kevin Mills at the East Michigan Environmental Action Council, 21220 West Fourteen Mile Road, Birmingham, MI 48010. (313)258-5188.

* * * * *

A multi-disciplinary group of university researchers who are eager to pool their expertise to help solve problems associated with water and aquatic ecosystems have formed The Water Network. The Network's objective is to conduct research and provide advice on water, its use, development and management in Canada and perhaps eventually in other parts of the world.

Dr. Marie Sanderson, formerly with the Great Lakes Institute, University of Windsor, joins the staff of people from many disciplines as Acting Director. To find out more about the Network, write or call Dr. Sanderson at the Faculty of Environmental Studies, University of Waterloo, Waterloo, ON N2L 3G1. (519)885-1211 ext 6962.

* * * * *

A team comprised of state, federal and local government representatives led by the Minnesota Pollution Control Agency joined forces to prepare a master plan called the Minnesota Ground Water Protection Strategy to prevent the state's groundwater from being degraded or exhausted. The strategy includes four initiatives which identify measures to protect groundwater's quality and quantity and promote research and education about the resource.

For more information contact Katherine Carlson, Minnesota Pollution Control Agency, 520 Lafayette Road, St. Paul, MN 55155. (612)296-6300.

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A policy document on medical waste disposal issues approved by the eight-state Great Lakes Commission was unveiled at the Commission's 1988 Annual Meeting held last November in Milwaukee, Wisconsin. The document, developed by a special task force on medical waste disposal, also included a call for vigorous inspection, compliance and enforcement programs and the establishment of education programs aimed at generators, transporters, disposal facility operators and members of the general public.

Former Commissioner of the New York State Department of Environmental Conservation Henry G. (Hank) Williams was also appointed chairman to the Great Lakes Commission at the meeting.

For further information on the Great Lakes Commission and its meeting, contact Cathy Chown, Great Lakes Commission, The Argus II Building, 400 South Fourth Street, Ann Arbor, MI 48103-4816. (313)665-9135.

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Former Wisconsin Governor Anthony S. Earl has been named Chairman of the Board of Directors for The Center for the Great Lakes. Mr. Earl was a key supporter of the 1986 Great Lakes Toxic Substances Control Agreement, signed by the Governors and Premiers of the Great Lakes region. He succeeds former Michigan Governor William Milliken.

For other updates on the Center's activities, contact the Center for the Great Lakes, 435 N. Michigan Avenue, Suite 1408, Chicago, IL 60611. (312)645-0901.

LAKE LEVELS UPDATE

# Information and Opinions Shared at Public Forum on Great Lakes Fluctuating Levels

*by Kim Tassier*

People with lakefront homes. People with recreational boats. People with environmental priorities. Citizens with these and other concerns about fluctuating water levels in the Great Lakes and St. Lawrence River met in ten locations on October 22, 1988 to discuss these issues and to learn more about the International Joint Commission (IJC) study on the topic.

The Project Management Team (PMT) for the IJC Levels Reference Study sponsored the day-long public forum. Two live broadcasts were transmitted via satellite from Detroit to ten community meetings around the basin. The PMT co-chairs, representatives from each of the study's five functional groups, and an audience of interested representatives from around the basin took part in the live studio discussions Both sessions were moderated by Quebec broadcaster and shoreline property owner Charlotte Gobeil.

Those attending the ten community meetings were welcomed by a community coordinator and facilitators for each site. During the first broadcast, PMT members described their work in the study, its goals, and the work of the five functional groups. PMT U.S. Co-Chair General Theodore Vander Els stated that the object of the Levels Reference Study was to consider actions or measures governments might take to alleviate the negative effects of fluctuating water levels. One of the unique characteristics of this study when compared to those of the past, he added, is the call for extensive public involvement. Canadian PMT Co-Chair Elizabeth Dowdeswell stated that the great challenge of this study was to understand the balance between human activities and the natural system.

A specially invited audience of interest group and geographic area representatives also posed questions and comments to the various PMT members during the first broadcast. Issues discussed included the timeliness of the study, whether the greenhouse effect will be considered by the study groups, how the concerns of various interest groups were being incorporated into the study, and the extent to which other options beyond structural measures have been studied. Functional group co-chairs responded to each of these issues; for example, Functional Group One (Hydraulics, Hydrology, and Climate) Co-Chair Doug Cuthbert emphasized that a much broader perspective was being taken for this study. As such, potential climate change issues are an integral part of that group's work.

Another aim of the study, according to Functional Group Four (Public Participation and Communications) Co-Chair David LaRoche, is to determine the extent to which humans should "tinker" with the system or leave it alone. Options for building or removing regulatory structures, zoning practices, compensation programs, cost-sharing arrangements and other possible options for governments to undertake are all being investigated by the functional groups. Each of these potential options will be evaluated on the basis of economic efficiency, environmental integrity, political implementability, social desireability and equity.

Functional Group Three (Socioeconomic and Environmental Assessment) Co-Chair Barry Smit noted that levels-related interest groups had been identified and that representatives from many of these groups had participated in group depth interviews last fall (see Focus, volume 13, issue 3, page 9). Identified interest groups include agriculture, commercial fishing, commercial and residential development, environmentalists, governments, hydropower, industry, North American natives, recreation, residential shoreline property owners and transportation.

After the first broadcast, participants in each of the ten sites discussed these and other issues in their own mid-day sessions. Representatives from each site then telephoned their questions, comments and concerns to the studio audience in Detroit during the second broadcast. Questions were raised by facilitators at each site to help participants identify their major concerns about the effects of fluctuating Great Lakes water levels.

Several issues, questions and suggestions were common to the discussions of many sites. Among these were: (1) more interaction among interest groups is needed; (2) a better information delivery system regarding changing water levels is needed; (3) the majority of partici-

# Public Input Sought on Proposed Listing/ Delisting Criteria for Great Lakes Areas of Concern

In 1987 the International Joint Commission's Great Lakes Water Quality Board (WQB) recommended that a common set of criteria be developed to determine when ecosystem conditions have been impacted enough to warrant designation as an Area of Concern, and when ecosystem conditions have been sufficiently improved to delist an Area of Concern. Based on scientific input and policy considerations, the WQB has proposed a set of listing and delisting criteria for each of the 14 use impairments in Annex 2 of the Great Lakes Water Quality Agreement, for use by the Commission in its role of review and comment of each remedial action plan.

These criteria have been sent to the Great Lakes Science Advisory Board and the Great Lakes Fishery Commission for review, and the SAB's review of such criteria is included in this document. The WQB also felt that public input on these criteria is important. Thus, presented below is the preamble and the 14 listing/ delisting criteria.

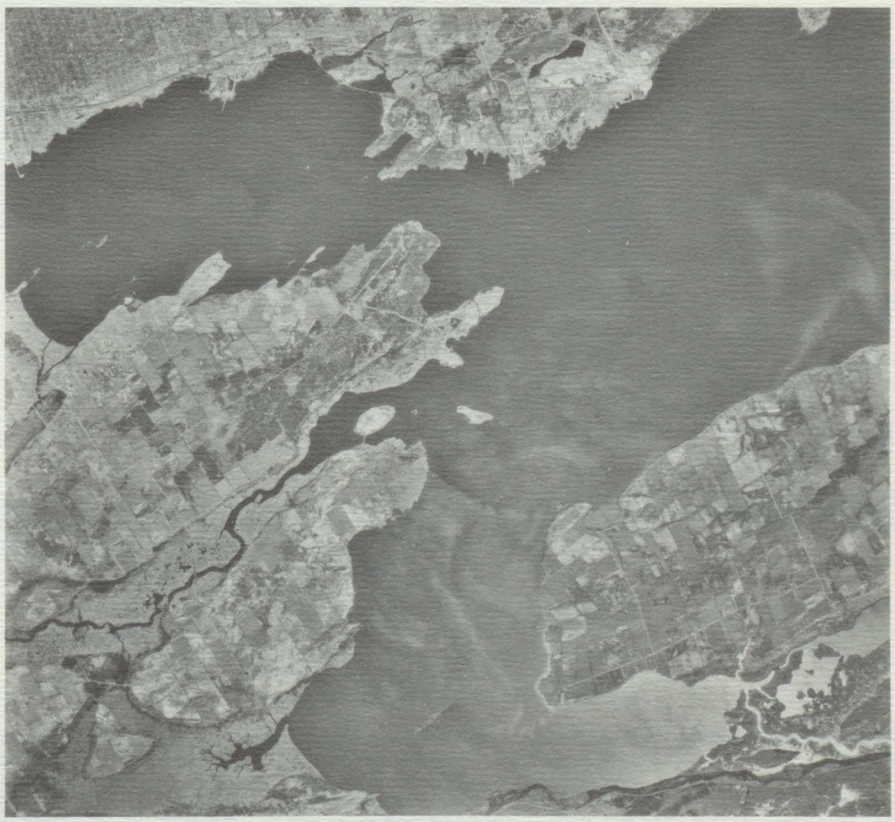
All interested persons are invited to submit written comments on these criteria to John Hartig, International Joint Commission, 100 Ouellette Avenue, Eighth floor, Windsor, ON N9A 6T3 OR P.O. Box 32869, Detroit, MI 48232 by ~~April 28, 1989~~ July 28. References used in the development of these criteria are available from the same address on request. The Water Quality Board will consider revisions to these listing/delisting criteria based on all input received.

## Proposed Listing/ Delisting Criteria for Great Lakes Areas of Concern

Annex 2 of the revised Great Lakes Water Quality Agreement defines Areas of Concern as geographic areas that fail to meet the general or specific objectives of the Agreement, where such failure has caused or is likely to cause impairment of beneficial use or of the area's ability to support aquatic life. Impairment of beneficial use is defined as a change in the chemical, physical or biological integrity of the Great Lakes system sufficient to cause any of the 14 use impairments in the attached table.

Geographic areas eligible to be considered include boundary waters of the Great Lakes system (including Lake Michigan), the mouths of tributaries and inland coastal lakes at the same water level as boundary waters. Boundary waters of the Great Lakes system are defined as the waters from main shore to main shore of the Great Lakes and connecting channels along which the international boundary between the United States and Canada passes, including all bays, arms and inlets, but excluding tributary waters.

The intent of the listing/delisting criteria for Great Lakes Areas of



*The Bay of Quinte at Belleville, Ontario, one of the 42 Areas of Concer*

## LISTING/DELISTING CRITERIA FOR GREAT LAKES AREAS OF CONCERN

| USE IMPAIRMENT | LISTING CRITERIA | DELISTING CRITERIA |
|---|---|---|
| Restrictions on Fish and Wildlife Consumption | When contaminant levels in fish or wildlife populations exceed current standards, objectives or guidelines and public health advisories are in effect for human consumption of fish or wildlife. Contaminant levels in fish and wildlife must be due to contaminant input from the watershed (i.e. lipid-weight, contaminant concentrations in fish and wildlife will exceed lakewide or regional levels). | When contaminant levels in fish and wildlife populations do not exceed current standards, objectives or guidelines and no public health advisories are in effect for human consumption of fish or wildlife. |
| Tainting of Fish and Wildlife Flavor | When effluent limits necessary to achieve ambient water quality standards for the anthropogenic substance(s) causing tainting are being exceeded and survey results have identified tainting of fish or wildlife flavor. | When effluent limits necessary to achieve ambient water quality standards for the anthropogenic substance(s) causing tainting are being met and a survey has confirmed no tainting of fish or wildlife flavor. |
| Degraded Fish and Wildlife Populations | When fish and wildlife personnel have identified degraded fish or wildlife populations due to a cause within the watershed as part of fish and wildlife management programs. | When environmental conditions support healthy, self-sustaining communities of desired fish and wildlife at predetermined levels of abundance that would be expected from the amount and quality of suitable physical, chemical and biological habitat present. For example, the Green Bay RAP has identified quantifiable objectives for desired population densities (e.g. seven adult walleye/acre, 500 nesting pairs of Forster's terns, etc.) to allow a determination to be made. An effort must be made to ensure that such ecosystem objectives for Areas of Concern are consistent with ecosystem objectives being established for the Great Lakes (e.g. lake trout productivity in Lake Superior >0.38 kg/hectare/yr) and consistent with fish community goals being established under the auspices of the Great Lakes Fishery Commission. |
| Fish Tumors or Other Deformities | One would expect a zero liver tumor incidence rate in fishes from clean locations. However, due to uncertainty in fish movement, other possible causes and experience with field data, a site will be listed as an Area of Concern when the incidence of neoplastic or pre-neoplastic liver tumors exceeds 2% in bullheads or 3.5% in suckers. A similar approach should be developed for other deformities. | When the incidence rate of neoplastic and pre-neoplastic liver tumors in bottom-feeding fishes does not exceed 2% in bull-heads and 3.5% in suckers. A similar approach should be developed for other deformities. |
| Bird or Animal Deformities or Reproductive Problems | Use of incidence rates of cross-bill syndrome and reproductive failure in populations of colonial birds has not received as much attention as chemical objectives. The incidence rates of cross-bill syndrome and congenital malformations in sentinel wildlife species can be statistically compared between unimpacted control populations and impacted control populations in Areas of Concern (e.g. Green Bay and Saginaw Bay). A site will be listed as an Area of Concern when incidence rates of cross-bill syndrome, reproductive failure, etc. are significantly (95% probability level) higher than incidence rates at control sites. Further a site will be listed when bald eagle reproduction is less than one eaglet per active nest. | When there is no significant difference between incidence rates of cross-bill syndrome, reproductive failure, etc. in colonial birds from the Area of Concern and those in control populations. Further, bald eagle reproduction will be at least one eaglet per active nest. |
| Degradation of Benthos | When the benthic macroinvertebrate community structure significantly diverges from unimpacted control sites of comparable physical and chemical characteristics. Benthic invertebrate community structure and composition are good integrators of ecosystem status. Three examples of utility include: 1) developing an endpoint using species diversity; 2) quantifying divergence from an expected community, given quantifiable physical and chemical habitat descriptors; and 3) developing an ecosystem objective using benthic community structure. Further, benthic invertebrates are effective for bioassessment of sediment-associated contaminants. It is recommended that both field and laboratory bioassay data and historical information be used to define endpoints for toxicity and bioavailability of sediment-associated contaminants. A site will be listed when toxicity or bioavailability of sediment-associated contaminants is significantly (95% probability level) higher than controls. | When the benthic macroinvertebrate community structure does not significantly diverge from unimpacted control sites of comparable physical and chemical characteristics. Further, a site will be delisted when toxicity and bioavailability of sediment-associated contaminants in the Area of Concern are not significantly (95% probability level) higher than controls. |
| Restrictions on Dredging Activities | When contaminants in sediment exceed standards, guidelines or objectives, and there are restrictions on the disposal of dredged materials. For example, the Ontario Ministry of the Environment has set guidelines which address the disposal of sediments in open water. If the contaminant concentrations exceed the guidelines, the material is considered unsuitable for open-water disposal. The Great Lakes states have individual policies based on a case-by-case consideration of contaminant levels and deep-water placements. U.S. EPA's criteria for sediment classification are used to help make a determination. | When contaminants in sediment do not exceed standards, guidelines or objectives, and there are no restrictions on the disposal of dredged materials. |
| Eutrophication or Undesirable Algae | When there are persistent water quality problems (e.g. dissolved oxygen depletion of bottom waters, nuisance algal accumulation on bathing beaches, nuisance algal blooms, decreased water clarity, etc.) attributed to accelerated or cultural eutrophication or the area is contributing to the lack of achievement of the Great Lakes phosphorus target loads identified in Annex 3 of the Agreement. | When there are no persistent water quality problems (e.g. dissolved oxygen depletion of bottom waters, nuisance algal accumulation on bathing beaches, nuisance algal blooms, decreased water clarity, etc.) attributed to accelerated or cultural eutrophication and the Area of Concern is not contributing to the lack of achievement of the Great Lakes phosphorus target loads identified in Annex 3 of the Agreement. |

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## LISTING/DELISTING CRITERIA FOR GREAT LAKES AREAS OF CONCERN

| USE IMPAIRMENT | LISTING CRITERIA | DELISTING CRITERIA |
|---|---|---|
| Restrictions on Drinking Water Consumption or Taste and Odor Problems | The primary concern is public health and potable water supply. Thus, any waters (intended for human consumption) that contained disease-causing organisms or hazardous concentrations of toxic chemicals or radioactive substances in exceedence of standards, objectives, or guidelines will be listed as an Area of Concern. Numerical water quality objectives and standards have been established to protect human health (e.g. ten of the 44 Agreement objectives have human health considerations; if required objectives are not available, priority must be given to establishment of drinking water objectives). Further, a site will be listed as an Area of Concern when taste and odor problems are present (e.g. taste and odor problems due to blue-green algae or phenolic compounds). | Any waters intended for human consumption should be free of disease-causing organisms or hazardous concentrations of toxic chemicals or radioactive substances. Numerical water quality objectives, standards and guidelines will be met (e.g. ten of the 44 Agreement objectives have human health considerations; if required objectives are not available, priority must be given to establishment of drinking water objectives). Taste and odor problems will also be absent (e.g. taste and odor problems due to blue-green algae or phenolic compounds). |
| Beach Closings | When there are persistent beach closings due to contamination from bacteria, fungi or viruses that may produce enteric disorders or eye, ear, nose, throat and skin infections or other human diseases and infections. For example, the Province of Ontario has established the following criteria: 1) when the geometric mean of a series of fecal coliform bacteria measurements exceeds 100 colonies per 100 ml; and 2) when the geometric mean of a series of total coliform measurements exceeds 1,000 colonies per 100 ml. | When there are no persistent beach closings and waters for body contact recreation activities are substantially free from bacteria, fungi or viruses that may produce enteric disorders or eye, ear, nose and throat infections. For example, the Province of Ontario has established the following criteria: 1) when the geometric mean of a series of fecal coliform bacteria measurements exceeds 100 colonies per 100 ml; and 2) when the geometric mean of a series of total coliform measurements exceeds 1,000 colonies per 100 ml. |
| Degradation of Aesthetics | When debris, oil, scum or any substance produces a persistent objectionable deposit, unnatural color or turbidity, or unnatural odor. | When the waters are devoid of debris, oil, scum or any substance which would produce a persistent objectionable deposit, unnatural color or turbidity or unnatural odor. |
| Added Costs to Agriculture or Industry | When there are additional costs required to treat the water prior to use for agricultural purposes (i.e. including, but not limited to, livestock watering, irrigation and crop-spraying) or industrial purposes (i.e. intended for commercial or industrial applications and noncontact food processing). | When there are no additional costs required to treat the water prior to use for agricultural purposes (i.e. including, but not limited to, livestock watering, irrigation and crop-spraying) and industrial purposes (i.e. intended for commercial or industrial applications and noncontact food processing). |
| Degradation of Phytoplankton and Zooplankton Populations | When phytoplankton or zooplankton community structure significantly diverges from unimpacted control sites of comparable physicochemical characteristics. Phytoplankton and zooplankton populations should also be used to assess the effects of contaminants. Greater emphasis must be placed on ecological toxicology, including use of bioassays and field data. A site will be listed as an Area of Concern when phytoplankton or zooplankton bioassays (e.g. Ceriodaphnia; algal fractionation bioassays) confirm toxicity (significant at the 95% probability level). | When phytoplankton and zooplankton community structure does not diverge from unimpacted control sites of comparable physicochemical characteristics. Further, a site will be delisted as an Area of Concern when bioassays confirm no significant phytoplankton or zooplankton toxicity (at the 95% probability level). |
| Loss of Fish and Wildlife Habitat | When fish and wildlife personnel have identified loss of fish and wildlife habitat due to water quality contamination as part of fish and wildlife management program. | Once loss of fish and wildlife habitat has been established (due to water quality degradation), the jurisdictions should identify species-specific fish and wildlife goals for the Area of Concern. The amount and quality of physical, chemical and biological habitat required to meet the goals can then be determined and compared against existing conditions. Once the amount and quality of physical, chemical and biological habitat has been achieved (consistent with fish and wildlife management goals), the use would no longer be impaired. Species-specific goals for self-sustaining fish and wildlife populations are desired so that: 1) essential habitats are created and protected by law from future development, physical degradation or contamination; 2) fish and wildlife can migrate freely in and through Areas of Concern to utilize essential habitats; 3) management of fish and wildlife populations in Areas of Concern is compatible with management plans developed by fish and wildlife authorities; and 4) fish and wildlife populations in Areas of Concern are self-sustaining (i.e. having stable population structure and surviving without periodic stocking by humans) and normally productive (i.e. productive at a level expected from that amount of habitat present under unimpaired natural conditions, based on historic information on sport, commercial, non-game and endangered species in Areas of Concern, as set forth in RAPs). |

Concern presented in the enclosed table is to establish a consistent set of criteria that can be uniformly applied throughout the Great Lakes basin. Implicit within this approach is use of the general and specific Great Lakes Water Quality Agreement objectives.

Remedial action plans (RAPs) are intended to address use impairments of a local geographical extent and cause, rather than lakewide or basinwide phenomena. The attached criteria will be used by the Commission in making recommendations to the Parties to list/delist Great Lakes Areas of Concern. An example of application of these listing/delisting criteria is that if a geographic area of the boundary waters, a mouth of a tributary, or an inland coastal lake at the same water level as boundary waters has a health advisory on fish that is unique or different from the whole lake, it would be recommended as an Area of Concern by the IJC to the two federal governments.

An exception to this would be that if a health advisory on fish (in a geographic area of the boundary waters, a mouth of a tributary, or an inland coastal lake at the same water level) is no different from the health advisory on the whole lake (e.g. fat or lipid-weight contaminant concentrations of fish from the localized area are not higher than mean, lakewide contaminant concentrations; or contaminant concentrations in fish from the localized area are proven to be the result of chemical contamination from a different part of the boundary waters) and this area is not contributing to a whole lake problem, then it would not be identified as an Area of Concern. The intent here is that such whole lake problems will be addressed within lakewide management plans identified in Annex 2 of the Agreement.

Once a new Area of Concern has been identified and listed by the Parties, a RAP would be developed as prescribed in Annex 2 of the revised Great Lakes Water Quality Agreement. As stated in the Agreement, RAPs shall embody a systematic and comprehensive ecosystem approach to restoring beneficial uses in Areas of Concern. The use impairments identified will then be the issues addressed in a RAP. If additional impaired uses are discovered during the development of the RAP, the Parties and jurisdictions can revise, in writing, the definition of the problem based on the impaired use criteria in the attached table.

The Water Quality Board proposes that these listing/delisting criteria for Great Lakes Areas of Concern be uniformly applied throughout the Great Lakes basin. Further, these criteria are intended to help ensure that the RAP program is properly focused, is pragmatic and obtains maximum benefit out of limited resources.

The Science Advisory Board's review of the proposed listing/delisting criteria has led to the following observations and suggestions. First, the proposed criteria are not, in fact, criteria in the more accurate use of this term. They are more properly designated as "technical indicators," useful for guiding decisions regarding the acceptable degree of use impairment in the lakes. We suggest their redesignation as Technical Indicators. Because they address only water quality in a narrower sense than that implied by the 1978 revised Great Lakes Water Quality Agreement, we suggest that a preamble or preface by provided which would identify the social and economic factors also involved. Language for the preamble may be found in the Science Advisory Board's Guidelines for Review of Remedial Action Plans.

A second suggestion is that some consideration be given to validation of data on which RAP decisions are based. This consideration should be reflected by indicating the level of uncertainty regarding the available data and estimates of risk in alternative judgments. Some indication of how to deal with risk factors would be useful.

Third, so far as feasible, trends and threshold as cross-over points should be identified and risk estimates or prudent calculations be provided where the data may not be sufficiently informative.

In summary, we find the proposed criteria a necessary but insufficient tool of decision making for Areas of Concern. A set of technical indicators with associated analysis of risks and means of verification would be a valuable input to the RAP process. What is needed is to place these indicators in the broader context of public decision making which will ultimately come down to a political judgment — hopefully in the better meaning of the term political. We do not foresee the emergence of criteria that could be applied to automatically list or delist an Area of Concern. Those whose concern is — or should be — greatest will somehow have the final word, so long as democratic practices prevail.

# LAKE LEVELS UPDATE

pants in Buffalo, Toledo and Chicago were in favor of regulating all five lakes; (4) a lead, authoritative agency is needed to oversee the regulation of lake levels and related programs; (5) we should be learning to live with fluctuating water levels rather than trying to regulate them; (6) the effect of global climate change on lake levels should be researched; (7) environmental considerations are important; and (8) the need for equal weighting for each of the lakes and the St. Lawrence River. (Highlights of the discussions in the ten sites are provided at the close of this article.)

## Summary

Approximately 500 people participated in the day's events. The forum was successful in reaching a broad geographic audience and allowing people to voice their concerns. The size of the groups ranged from 15 in Potsdam, New York (along with eight inches of snow) to more than 75 in Oakville, Ontario. In some sites, such as Buffalo, most participants were from one interest group and from one area. In others like Duluth and Oakville, people came from as far as 200 miles away and with a wide range of concerns.

The variety of interest groups were also well represented at the ten sites, including representatives of the three levels of government of both countries, shipping, property owners, environmentalists, marina and other recreational business owners, native North Americans, port authorities, students, hydropower, recreational boaters and industry. Some were new to the IJC and to the Levels Reference Study. Others had been following this and previous studies for years.

A number of forum viewers expressed dissatisfaction that the study to date lacked substantive progress, noting that materials distributed for review and many of the comments made had been public knowledge for at least several months. Further, six of the communities recommended a longer call-in period at future forums. They felt that insufficient time had been allowed for comments and questions to the PMT from the remote sites.

Information materials resulting from the forum include a summary of the discussions from each of the ten community meetings, as well as three video presentations which are nearing completion. The first is a one-hour program introducing viewers to the issues related to fluctuating water levels and to the Levels Reference Study. This will contain some footage from the public forum.

A second videotape program will feature a 25-minute, condensed version of the two forum broadcasts. A third videotape set will contain the full three hours of the public forum broadcasts. All three videotapes will be available at cost or on loan to all interested viewers.

For information on obtaining a copy of the videotape, a summary of the discussions, or other Levels Reference Study-related materials, contact Kim Tassier, International Joint Commission, 100 Ouellette Avenue, Eighth floor, Windsor ON N9A 6T3 or P.O. Box 32869, Detroit, MI 48232. In Canada call (519)256-7821 and in the United States call (313)226-2170.

*Charlotte Gobeil (moderator), Project Management Team Co-Chairs Elizabeth Dowdeswell (Environment Canada) and Brig. General Theodore Vander Els (U.S. Army Corps of Engineers).*

# LAKE LEVELS UPDATE

*Highlights of each site's comments follow.*

## Buffalo, New York

The group at Buffalo raised the question, "Does sufficient knowledge exist to develop adequate regulation schemes?" Some people agreed that too many human-made structures impede natural flows, and a sufficient authority for proper regulation does not appear to exist. Thus, the Buffalo group stated during the second broadcast that the study should strive to identify an ability to regulate the entire basin.

## Chicago, Illinois

A large number of people in Chicago were in favor of regulating lakes Erie, Huron and Michigan in the same or similar that manner lakes Superior and Ontario are regulated. One person stated that he believed all interest groups would be helped or at least would not suffer if the entire system were regulated.

Chicago's afternoon report centered around the group's feeling that (1) engineering solutions should be used to alter the water fluctuations; (2) a concern for impacts on the environment due to alterations in the system; and (3) cynicism towards the willingness of the governments to respond.

## Duluth, Minnesota

Citizens from Minnesota, Wisconsin, Michigan and Thunder Bay, Ontario attended the Duluth meeting. The group expressed a strong interest in meeting with the other interest groups to understand their positions on lake levels and to negotiate a joint position. Their greatest concern regarded compensation for property owners and others for resulting damages if Lake Superior were raised above the present 602-foot limit. They proposed that all "tinkering" or inplace regulation measures be stopped and steps be taken in the future to reverse human-caused alterations to the Great Lakes basin.

## Montreal, Quebec

A lack of understanding about what the IJC is or does, water quality issues, boating, port and shipping problems due to low levels, regulation practices for Lake Ontario and their negative impacts on the St. Lawrence River, hydropower issues, how group concerns can influence the study, negative environmental impacts due to regulation, and waterfront development schemes were all addressed by participants at the Montreal site.

Specific questions and comments for the PMT in Detroit included (1) has the IJC undertaken detailed study of the St. Lawrence River as has been done for the Great Lakes? (2) water quality and water quantity are interconnected and must be considered together; and (3) the measures studied and proposed by the Commission must take into account the effects on the St. Lawrence River; and (4) Quebec should not be neglected in a "system approach" to Great Lakes water quantity issues.

## Oakville, Ontario

Oakville participants represented a wide variety of interests and concerns. This diversity fueled much discussion over whether more regulation is needed, diversion issues, perceptions towards regulation, the need for a lead agency to oversee regulations, the liability of governments regarding levels, hydropower concerns, and the reactive (rather than proactive) nature of the study.

Their discussions focused on the need to improve predictive capabilities and communications to the public about levels. Structural measures were supported by some people, but were otherwise opposed by a large segment of the group as was any type of assistance to shoreline property owners. Shoreline management received strong support, as did study-related public input and involvement opportunities.

## Owen Sound, Ontario

In Owen Sound, topics of conversation included the Free Trade Agreement, shoreline erosion, water quality, accessibility of water for household use (due to low water levels), pressures for developing the shoreline, commercial fisheries, the effect of fluctuating levels on fish spawning beds, and the control of fluctuations.

Their questions in the second broadcast included these issues as well as (1) how do fluctuations in water levels affect wetlands, access of fish to spawning beds, wildlife and habitat, and sport and commercial fishing? (2) should we be learning to live with the fluctuations in levels, once we are informed of the extremes, rather than attempting regulation? and (3) can we be informed of the extent of water levels fluctuations?

# LAKE LEVELS UPDATE

## Potsdam, Ontario

The Potsdam group had a basic, fundamental concern that the St. Lawrence River is regarded as a drain or a plug for the rest of the system, and that St. Lawrence interests are not considered in fluctuating water levels issues. They wanted to know how the study was addressing this issue and if changes will be made in this perspective. Other concerns raised included the effects of major regulation, water quality issues particularly as they relate wetlands, sand dunes and habitat, recreational safety with extremes in fluctuations, and better forecasting and information dispersal needs.

## Sault Ste. Marie, Ontario

Drinking water, regulation, diversions, the lack of enforcement powers vested in the IJC, public education and warning, the effect of fluctuations on fish stock and spawning, transportation, erosion, riparian interest, recreational activities on the St. Mary's River, and Lake Superior as a storage basin were all discussed at the Sault Ste. Marie meeting.

The participants were skeptical of full regulation of the entire system. They felt that people need to know what they will be up against with future levels, and thus better forecasting followed by the wide dissemination of that information to the public is needed.

## Toledo, Ohio

Most people attending the Toledo meeting were riparians. Others represented yacht clubs, hydropower and commercial fishing. Issues discussed included the damage caused by extreme high and low water levels, great concern for the effect of fluctuations on water quality, and the effect of fluctuations on the ecosystem.

Questions and comment topics from Toledo to the PMT ranged from wanting more information on study progress, to advocating full management of the system with existing diversions, to wetlands preservation.

## Windsor, Ontario

Property damage, filling wetlands along the Detroit River, ice damage to private property, effects of low water levels on boating, and the apparent lack of commitment from the IJC to educate the public were issues raised at the Windsor meeting. Participants stated their support for structural control of the inner lakes and greater use of shoreline protection structures in their presentation during the second broadcast, and questioned the procedures being used to evaluate socioeconomic measures.

*Functional Group 1 Co-Chair Douglas Cuthbert and Charlotte Gobeil (moderator).*
*Credit: Frank Bevaqua*

# LAKE LEVELS UPDATE

## Great Lakes Levels and Flows

1988 ended with the levels of all lakes except Lake Ontario slightly above average, despite the drought conditions during the summer months. Lake Superior received almost twice the normal amount of precipitation in November 1988, setting a new record, and precipitation on lakes Michigan-Huron almost set a new record as well. While Lake Ontario was at its average level during the first two months of 1988, its levels dropped below average for the remainder of the year. The International St. Lawrence River Board of Control advised the Commission in early February that it was undertaking small deviations from Plan 1958-D in order to respond to the potential for low levels in the St. Lawrence River in 1989.

The U.S. Army Corps of Engineers included a six-page summary of 1988 in its January Bulletin of Lake Levels for the Great Lakes. Their situation report on the Great Lakes for 1985-1987, High Water Levels, U.S. Shoreline Damages, Modelling and Mapping, was also printed in December 1988. Limited copies of both reports are available from the Corps' Detroit District Office, P.O. Box 1027, Detroit, MI 48231.

**1988-1989 GREAT LAKES LEVELS**

| Lake | Recorded | Level Max/Year | Min/Year | Long-Term Average (1900-1987) |
|---|---|---|---|---|
| | | **OCTOBER** | | |
| Superior | 600.52 | 602.24/1986 | 599.49/1925 | 601.00 |
| Michigan-Huron | 578.12 | 581.62/1986 | 575.77/1964 | 578.44 |
| St. Clair | 573.52 | 576.69/1986 | 571.13/1934 | 573.44 |
| Erie | 570.42 | 573.31/1986 | 567.95/1934 | 570.33 |
| Ontario | 244.12 | 246.33/1947 | 241.72/1934 | 244.36 |
| | | **NOVEMBER** | | |
| Superior | 600.68 | 602.24/1985 | 599.17/1925 | 600.86 |
| Michigan-Huron | 578.14 | 581.29/1986 | 575.57/1964 | 578.22 |
| St. Clair | 573.49 | 576.20/1986 | 570.83/1934 | 573.15 |
| Erie | 570.35 | 573.01/1986 | 567.60/1934 | 570.07 |
| Ontario | 244.03 | 246.18/1945 | 241.45/1934 | 244.10 |
| | | **DECEMBER** | | |
| Superior | 600.67 | 601.99/1985 | 598.94/1925 | 600.64 |
| Michigan-Huron | 578.10 | 580.87/1986 | 575.40/1964 | 578.06 |
| St. Clair | 573.46 | 576.14/1986 | 571.05/1925 | 573.16 |
| Erie | 570.29 | 573.11/1986 | 567.53/1934 | 570.01 |
| Ontario | 243.76 | 246.19/1945 | 241.48/1934 | 244.03 |
| | | **JANUARY 1989** | | |
| Superior | 600.51 | 601.64/1986 | 598.58/1926 | 600.39 |
| Michigan-Huron | 577.96 | 580.65/1987 | 575.39/1965 | 577.92 |
| St. Clair | 573.59 | 576.13/1986 | 569.86/1936 | 572.83 |
| Erie | 570.43 | 573.05/1987 | 567.62/1935 | 569.99 |
| Ontario | 243.65 | 246.10/1946 | 241.67/1935 | 244.08 |

# IJC Completes Review of Two RAPs

*by John Hartig*

In October 1987, seven remedial action plans (RAPs) were tabled with the International Joint Commission (IJC) for review and comment. The Great Lakes Water Quality Board (WQB), as principal advisor to the IJC, coordinated the initial review of these RAPs. As outlined in the article in this issue on page five, committee members from the WQB, Great Lakes Science Advisory Board (SAB) and Great Lakes Fishery Commission participated in this review. The review process included presentations from the RAP coordinators on content of the RAPs, distribution of RAPs for independent review, compilation of all review comments, preparation of summary reports, reaching WQB consensus on each RAP review summary report, and Commission consideration of each summary report. Opportunity was provided throughout the process for communication between jurisdictional staff who prepared the RAPs and the reviewers to clarify specific points.

The WQB reached consensus on the reviews of four of these RAPs: Fox River/Lower Green Bay, River Raisin, Manistique River and Torch Lake. The Commission completed its review of the Fox River/Lower Green Bay and Torch Lake RAPs at its March executive session, and will consider the others at its April meeting. For the other three plans (Muskegon Lake, White Lake, and Deer Lake/Carp Creek and River), the State of Michigan is reviewing the environmental data base in light of the WQB's proposed listing/delisting criteria for Areas of Concern and will be reporting back to the WQB. Presented below are highlights of the Commission's completed reviews of the Torch Lake and Fox River/Lower Green Bay RAPs.


*Torch Lake Area of Concern.*

## Torch Lake RAP

The primary problem in Torch Lake is a health advisory on sauger and walleye due to the presence of tumors in these fishes. The causative factor of these fish tumors is still not known. The RAP identifies additional studies and reports that the U.S. Environmental Protection Agency is performing a remedial investigation and feasibility study under the Comprehensive Emergency Response and Compensation Liability Act, or more commonly called Superfund. Thus, revisions need to be made in the Torch Lake RAP in order to satisfy Stage one requirements of the Agreement. Again, the Commission concurred with the WQB's review, and forwarded these reviews and comments to the two countries' governments, with copies to the State of Michigan.

## Fox River/ Lower Green Bay RAP

In general, reviewers involved in the WQB process felt that this RAP was a good example of combining significant public involvement in an ecosystem approach to development of a RAP. They concluded that Stage one requirements in Annex 2 of the Agreement (i.e. problem definition and identification of causes) have been met. Stage two requirements (i.e. identification of remedial actions) have been partially met; additional studies are being performed to identify remedial actions for contaminated sediments. Further, they felt that there needed to be specific agency responsibility for each remedial action identified. Wisconsin Department of Natural Resources (DNR) is addressing these concerns and has established an implementation committee to help identify lead management agencies to implement the plan.

The Commission's own review of the RAP concurred with the WQB's analysis, pointing out that more information on industrial point source problems would be desirable. A letter was sent to the Governments of the U.S. and Canada, with copies to the State of Wisconsin, highlighting these conclusions.

In conclusion, it should be noted that the Commission views the RAP process as iterative, where RAPs are updated and improved based on greater understanding of the problems and their causes and the development of new technologies to remedy the problems. The challenge of RAPs is to make them focused and

*Fox River / Green Bay area*

specific enough to demonstrate that progress will be made. RAPs are intended to identify when specific remedial actions will be taken to resolve the problems and who is responsible for implementing those actions. If remedial actions cannot be identified and additional studies are needed, the RAP should identify when the studies will be initiated, when they will be completed, and when this new information will be used to identify remedial actions.

For more information about the Commission's review of these and other remedial action plans, contact John Hartig, IJC Great Lakes Regional Office, 100 Ouellette Avenue, Eighth floor, Windsor, ON N9A 6T3 or P.O. Box 32869, Detroit, MI 48232. In Canada call (519)256-7821 or in the U.S. call (313)226-2170.

## BOOKSHELF

Several reports are now available for distribution from the International Joint Commission. The Commission's *Fourth Biennial Report* is its official report to the Governments of the United States and Canada on the status of efforts to accomplish the goals of the Great Lakes Water Quality Agreement and includes recommendations for further actions by the two Parties. Its *Activities Report* provides highlights of the Commission's work over the last two years. Both are available in French and English languages. The Commission has also released its final report under its Reference for the Flathead River basin (see article, page 3). The report is entitled, *Impacts of a Proposed Coal Mine in the Flathead Basin.*

Requested as part of the Reference of August 1986, the *Interim Report on 1985-86 High Water Levels in the Great Lakes-St. Lawrence River Basin* outlines measures which could be taken during crisis conditions to alleviate problems associated with high water levels in the Great Lakes basin. The report is based on the findings of the International Joint Commission's Great Lakes Water Levels Task Force. Investigations continue under the Reference on long-term possibilities for addressing problems associated with these fluctuating water levels. A french version of the report is also available.

Finally, two reports focus on contaminated sediments in the Great Lakes basin. *Procedures for the Assessment of Contaminated Sediments in the Great Lakes* and *Options for the Remediation of Contaminated Sediments in the Great Lakes* are both available from the IJC's Great Lakes Regional Office, 100 Ouellette Avenue, Eighth floor, Windsor, ON N9A 6T3 or P.O. Box 32869, Detroit, MI 48232. For copies of the previously mentioned reports, contact the Regional Office or the Commission offices at 2001 S Street NW, Washington, DC 20440, (202)673-6222 or 100 Metcalfe, Eighteenth floor, Ottawa, ON K1P 5M1, (613)995-2984. For further information about these or other IJC reports, call (519)256-7821 in Canada or (313)226-2170 in the United States.

Fish are a low-calorie, high-protein food. A new Wisconsin Sea Grant booklet, *Fish: Low in Calories, High in Nutrition* compares the protein and calorie content of seafood with that of other meats. Also featured is a listing by calories, fat and protein of about 80 types of fish and seafood often found in the Great Lakes region.

Copies are available for 70 cents each (U.S. funds) from Wisconsin Sea Grant Communications, University of Wisconsin, 1800 University Avenue, Madison, WI 53705. (608)263-3259.

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*The International Great Lakes Sport Fishery of 1980* is a special September 1988 publication (88-4) of the Great Lakes Fishery Commission. It presents the results of the first direct estimates of angling effort and expenditures for Great Lakes fish over the entire Great Lakes region. The report is based on data collected in the U.S. 1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation and the Canadian federal-provincial 1980 Survey of Sport Fishing in Ontario.

Copies of this free report are available from the Great Lakes Fishery Commission, 1451 Green Road, Ann Arbor, MI 48105. (313)662-3209.

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*Toxic Contaminants and Ecosystem Health: A Great Lakes Focus* is based on a 1985 symposium/workshop organized by the International Joint Commission's Health of Aquatic Communities Task Force and sponsored by their Science Advisory Board. The book reports on the effects of persistent toxic substances on the health of living organisms in the lakes and on terrestrial organisms, including humans, who use Great Lakes resources; discusses methods of investigating such effects and recommends improved design for research and surveillance.

Copies of this book can be purchased for $95.00 (U.S. funds) from John Wiley and Son, 605 Third Avenue, New York, NY 10158. (212)850-6418.

*The Catalogue of Water-Efficient Technologies for the Urban/Residential Sector* was produced by the Water Program staff at the Rocky Mountain Institute, a non-profit research and educational foundation in Snowmass, Colorado. It presents an illustrated, current product profiles list demonstrating each technology's benefits, performance parameters, technical specifications, price, applications and selected examples of successful installations.

Copies of the catalogue are available for $95.00 from Rocky Mountain Institute, 1739 Snowmass Creek Road, Snowmass, CO 81654-9199. (303)927-3128.

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Human activities have had such an impact on our planet that we are changing the composition of the earth's atmosphere. Industrial chemicals have penetrated even the upper layers of the atmosphere and are threatening the ozone layer. Concerns such as these have resulted in the Atmospheric Environment Service issuing a fact sheet on the *Ozone Layer*. It defines ozone, outlines threats to the ozone shield and addresses the international accord to reduce the use of chlorofluorocarbons signed by 24 nations in September 1987, commonly known as the Montreal Accord.

Copies of fact sheets on the *Ozone Layer; Greenhouse Gases; Impact of Global Warming;* and *Climate Change and Variability*, are available free from Environment Canada, Communications Directorate, Atmospheric Environment Service, 4905 Dufferin Street, Downsview, ON M3H 5T4. (416)739-4763.

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*Living Without Landfills* was written with the assistance of the board of the Radioactive Waste Campaign for environmental activists and state and local officials. The book discusses what the term "low-level waste" means, how it is created and who generates it. It then presents a brief history of radioactive landfill experience in the United States and looks at the government's response to the low-level waste problem. Finally, it describes waste management options and matches them to specific waste problems.

Copies of this book are available for $12.00 (U.S. funds) from the Radioactive Waste Campaign, 625 Broadway, 2nd floor, New York, NY 10012. (212)473-7390.

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Prepared as a guide for citizen's groups in Ontario, *Media Alert* is a directory of media contacts in the province. Listings are arranged alphabetically by city and, when possible, names and telephone numbers of editors, reporters and news directors are included.

Copies of the directory are available for a fee from the Ontario Environment Network, P.O. Box 125, Station P, Toronto, ON M5S 2Z7. (416)925-1322.

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The U.S. Environmental Protection Agency's Great Lakes National Program Office has released its *Five-Year Program Strategy* for meeting responsibilities under the Great Lakes provisions of the U.S. Clean Water Act and the Great Lakes Water Quality Agreement. Copies are available from the Program Office at 230 S. Dearborn Street, Chicago, IL 60604. (312)353-3808.

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*Coastal Processes Workbook: Evaluating the Risks of Flooding and Erosion for Great Lakes Coastal Property* was prepared by J. Philip Keillor and Allen H. Miller for the University of Wisconsin Sea Grant Institute. The workbook describes how to evaluate the likely effects of changing lake levels, storm surges, seiches and shoreline erosion on Great Lakes coastal property. Identified as University of Wisconsin Sea Grant Advisory Services Report No. WIS-SG-87-431, this publication is available from the Communications Office, University of Wisconsin Sea Grant Institute, 1800 University Avenue, Madison WI 53705. (608)263-3259.

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The Combined Sewer Overflow (CSO) problem can seem a bit overwhelming to many of us. The report, *Reducing Combined Sewage Overflows: Background on the Problem and What You Can Do* will answer the questions: what are CSOs? and what can I as an individual do to reduce CSOs? Grand Rapids is used as an example of attacking the CSO problem since it is the first city in Michigan that has extensive CSO requirements in their wastewater discharge permits.

To obtain a free copy of the CSO report, send a stamped self-addressed envelope to Shari Schaftlein, West Michigan Environmental Action Council, 1432 Wealthy Street S.E., Grand Rapids, MI 49506. (616)451-3051.

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*Water in the West: Competition and Conflict* is the title of a special issue of *Western Wildlands* which explores water quantity and quality issues in the western region of the United States. Specific sections focus on transboundary water issues in the Canadian-American west, a history of Montana's water rights laws, nonpoint pollution problems, and the use and abuse of the Clark Fork River. Copies are available for $3.00 U.S. funds from *Western Wildlands*, School of Forestry — Science Complex, University of Montana, Missoula, MT 59812.

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*The 1988 Michigan Solid Waste and Resource Recovery Directory* is the only document that puts together, in one place, the complete information and data on solid waste management and resource recovery activities in Michigan.

The 60-page directory, with maps and graphics, may be purchased from Michigan Waste Report, Inc. for $43.60 (U.S. funds). To order send purchase orders or include payment to Michigan Waste Report, Inc., 400 Ann Street NW, Suite 201-A, Grand Rapids, MI 49504 or telephone (616)451-8992.

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A 44-page guidebook on *Groundwater in Southwest Michigan* has just been published by Western Michigan University. The guidebook provides a concise description of the nature and limitations

of groundwater resources in southwest Michigan. It is written in a style readily understandable to individuals without scientific or technical backgrounds.

Copies of the guidebook can be obtained for $5.00 (U.S. funds) from the Science for Citizens Center, Western Michigan University, Kalamazoo, MI 49008, or by calling (616)387-2715. A free descriptive flyer and order form also is available on request.

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On page four of the November/December issue of *Focus*, the contact person at Environment Canada was incorrect. For information regarding the Lake Ontario Toxics Management Plan contact R.C.J. Sampson, Great Lakes Environment Office, Environment Canada, 25 St. Clair Avenue East, Sixth floor, Toronto, ON M4T 1M2. (416)973-1098.

On page five, we listed the booklet *Drinking Water: A Community Action Guide* as being available from Concern Inc. in Washington, DC. Darragh Lewis of the organization reports that several requests of the guide have been received. Plenty of copies are still available, for $3.00 (U.S. funds), from Concern, Inc., 1794 Columbia NW, Washington, DC 20009. (202)328-8160.

# Local and State Government Team Up to Ensure a Successful Rochester RAP

*by Margaret Peet and Jane Naylon*

In a unique approach to preparing a remedial action plan (RAP), the New York State Department of Environmental Conservation, Monroe County, and other local municipalities have teamed up to improve water quality in the Rochester Embayment of Lake Ontario and the streams that flow into the embayment. This government partnership recognizes that citizen participation is critical to the success of any remedial action plan.

To foster public involvement in the Rochester Embayment RAP, the New York State and Monroe County officials hosted a public meeting for the Rochester Embayment RAP in November 1988. This meeting, the "kick off" for the public participation aspect of the RAP, introduced citizens to the agencies involved and provided an outline of the work completed thus far on the plan by the state and Monroe County. Agency representatives solicited public perceptions of various water quality problems in the Rochester Embayment of Lake Ontario and its tributary streams, and the possible solutions to these issues.

## The Rochester Embayment

The Rochester Embayment Area of Concern is defined as the Lake Ontario nearshore area around Rochester, New York. The Genesee River flows from the New York/Pennsylvania border, through urban and rural areas, before emptying into the Rochester Embayment. Several other smaller waterways also flow into the embayment. While major pollution problems such as toxic pollution in the water and sediments have been identified, studies are being completed as a part of the RAP's development to further clarify these and other problems.

*The Genesee River entering Rochester Harbor at Rochester, NewYork*

## The Basin Planning Approach to RAP Development

Because water quality in the embayment is a reflection of what occurs upstream and in the embayment itself, the Rochester remedial action planning process consists of four

planning efforts: an assessment of each of three basins (Lake Ontario west and central basins and the Genesee River basin) and the embayment itself. As specific actions are recommended and implemented to improve water quality in the basins, the water quality of the embayment will in turn be restored. These basinwide recommendations and actions also will be integrated into the Rochester Embayment RAP.

Basinwide planning is not a new idea in Monroe County. After completing three research studies in the Irondequoit Creek subbasin of the Lake Ontario central basin, Monroe County prepared, and is now implementing, a water quality plan for the Irondequoit subbasin. Actions include a construction site erosion control program in cooperation with the local Soil and Water Conservation District, urban stormwater runoff renovation research in cooperation with the U.S. Geological Survey, and the application of aluminum sulfate to the bottom of Irondequoit Bay to reduce nutrient releases to the bay water. An outline and discussion of these existing implementation efforts will be incorporated into the Lake Ontario central basin plan.

While many remedial action plans are limited to using available data, Monroe County is funding the collection of baseline and storm event data for portions of one basin as part of its local contribution to the effort. The informaton collected in the field and from existing reports will be used to evaluate impaired uses, types and sources of pollutants, identify existing remedial actions underway, and to recommend actions to address remaining problems.

## Intergovernmental Cooperation and Coordination

The New York State Department of Environmental Conservation (NYSDEC) has ultimate responsibility for the preparation of all six remedial action plans in the state. However, because of Monroe County's successful implementation of water quality management planning and a proven track record in establishing public participation, the NYSDEC contracted with the county to prepare the Rochester RAP and its associated basin plans. While Monroe County is managing this project, NYSDEC remains active in all elements of RAP development by attending monthly project technical team and advisory group meetings.

Because intergovernmental cooperation is critical to successful RAP implementation, representatives of all municipal governments in the study area have been invited to participate in the RAP process through various advisory groups, including the Government Policy Group and the Water Quality Management Committee and its subcommittees. The Government Policy Group includes representatives from each of the nine counties in the watersheds and the city, towns and villages within Monroe County. These local government officials have an important stake in water quality goals and actions and will have an active role in this effort.

## Public Participation in the Rochester Embayment RAP

Public involvement is a critical aspect of the RAP. Public participation is integrated into each step of the planning process, including identification of goals and impaired uses, analysis of pollutants and their sources, and recommendations for remedial actions to improve water quality. Monroe County has established citizen advisory groups to assist in this process; the primary advisory group is the Monroe County Water Quality Management Committee (WQMC), members to which are jointly appointed by NYSDEC Commissioner Thomas Jorling and Monroe County Executive Thomas Frey. The WQMC includes representatives from public interest groups, economic interest groups, citizens and public officials. Standing subcommittees have been established by the WQMC to foster public participation in the development of each of the basin water quality plans.

## Project Staff Support

Monroe County has prepared a request for proposals to solicit consultants interested in the actual preparation of the four plans. In addition to the groups described above, an interagency technical group has been formed to oversee and coordinate the various aspects of this RAP project. Margaret Peet serves as chair of this technical group and coordinates the overall Rochester Embayment RAP effort. Jane Naylon, of the Monroe County Department of Planning, serves as the public participation coordinator.

If you would like further information on the Rochester RAP, contact Margaret at (716)428-5417 or Jane at (716)428-5466, Monroe County Department of Planning, 47 South Fitzhugh Street, Suite 200, Rochester, NY 14614-2299.

# EVENTS

**INTERNATIONAL JOINT COMMISSION**
**Schedule of Meetings**

The following includes upcoming meetings scheduled by the Commission and its various boards. Please contact an IJC office for further information.

| | | |
|---|---|---|
| March | 7-8 | IJC Executive Meeting<br>Windsor, ON |
| | 28-30 | Workshop on Cause-Effect Linkages<br>Chicago, IL |
| | 29-31 | Workshop on Research Strategies to Appraise Adverse Human Health Effects from Exposure to Hazardous Substances or Agents in the Great Lakes Basin Ecosystem<br>Chicago, IL |
| April | 11-13 | IJC Semi-Annual Meeting<br>Washington, DC |
| May | 16 | Great Lakes Water Quality Board Meeting<br>Chicago, IL |
| | 16-18 | Great Lakes Science Advisory Board Meeting<br>Buffalo, NY |
| June | 7-8 | IJC Executive Meeting<br>Ottawa, ON |
| | 26-28 | Great Lakes Water Quality Board Meeting<br>Ottawa/Gatineau, Quebec |

**General Conferences**

The Pollution Control Association (PCAO) is jointly sponsoring two events in the coming months. A one-day seminar on the **Industrial 4Rs** cosponsored with the Ontario Ministry of the Environment will be held on March 2, 1989 at the Skyline Hotel in Toronto, Ontario.

**Environmental Challenges: Thinking Globally and Acting Locally** is the theme for the April 23-25, 1989 joint annual conference of PCAO and the Air and Waste Management Association, Ontario Section, to be held at the Hamilton Convention Centre, Hamilton, Ontario. The conference will feature a large exhibit of suppliers to the air and water pollution control fields.

For further information on either event, contact Sandra Davey, PCAO, 10 Petch Crescent, Aurora, ON L4G 5N7. (416)841-1317.

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Holcomb Research Institute at Butler University in Indianapolis is offering two courses on **Applied Groundwater Modeling**, March 20-24 and April 17-21, 1989. The courses will focus on the application of modeling principles through the use of tested simulation models. The course is aimed at those who have been introduced to groundwater modeling concepts and wish to analyze field problems by applying well-tested and highly reliable computer codes. For more information on course content, contact Paul van der Heijde, Director, International Ground Water Modeling Center, Holcomb Research Institute, Butler University, 4600 Sunset Avenue, Indianapolis, IN 46208. (317) 9458.

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Discussion and debate on the demand for high quality water in the next century, possible diversions from the Great Lakes and legal issues concerning Michigan water will be featured at the 1989 Governor's Conference on **Water in Michigan: Into the Next Century**. The conference will be held during the last two days of Michigan State University's Agriculture and Natural Resources Week, March 23-24, 1989 in Lansing, Michigan.

Contact Lois Wolfson at the Institute of Water Research, 334 Natural Resources Building, Michigan State University, East Lansing, MI 48824 for more information, or call (517)353-3742.

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The Great Lakes Program of the State University of New York (SUNY) at Buffalo is hosting a one-day colloquium on **Contemporary and Emerging Issues in the Great Lakes** on Wednesday, April 12, 1989. To be held at the Center for Tomorrow on the SUNY Buffalo campus, the colloquium will bring together scientists from SUNY and from the University of Toronto in an attempt to join forces and resources for cooperative research activities.

For more information, contact Dr. R. Warren Flint, Great Lakes Program, SUNY at Buffalo, 207 Jarvis Hall, Buffalo, NY 14260, (716)636-2088 or Dr. Lino Grima, Institute for Environmental Studies, University of Toronto, 170 College Street, Toronto, ON M5S 1A4, (416)978-3486.

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A Conference on **Solving Environmental Problems: The Past as Prologue to the Present** will be held at The Evergreen State College, Olympia, Washington on April 27 to 30, 1989. This conference is cosponsored by the American Society for Environmental History and the Northwest Association for Environmental Studies, and is intended to help those working in the environmental fields to use historical perspectives in analyzing conflicting values, trends and political economic contexts beyond the immediate present and recent past.

For more details on the conference contact Carol Simila-Dickinson, Lab 1, The Evergreen State College, Olympia, WA 98505, (206)866-6000, ext. 6405.

Great Lakes United will hold its seventh **Annual Meeting** in Owen Sound, Ontario the weekend of May 5-7, 1989 on the Georgian College campus. Workshops, exhibits and social events are planned, and all interested citizens are welcome to attend.

Contact the organization's office for more details and registration materials, at Cassety Hall, SUNY College at Buffalo, 1300 Elmwood Avenue, Buffalo, NY 14222. (716)886-0142.

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The 1989 Conference on **The State of Our Coastal and Ocean Resources**, sponsored by the New York State Department of State, Division of Coastal Resources and Waterfront Revitalization, the New England/New York Coastal Zone Task Force and the Coastal States Organization, will be held at the New York Penta Hotel on May 10-12, 1989.

Through this conference, the sponsoring organizations hope to develop a nationwide action agenda and to examine innovative programs and current research concerning America's coastal and ocean resources. If you are interested in receiving more information, contact Harriet Rose, Director, Environmental and Health Consultants, Inc., 270 State Street, Hackensack, NJ 07601. (201)836-5356.

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The Water Research Associates' fourth **Profiting From Water** conference will focus on business and investment opportunities for the 1990s. The conference will be held in Santa Monica, California at the Sheraton Miramar Hotel on May 10-11, 1989 and will include discussions on issues, emerging technologies and business and investment opportunities in the water industry. For more information, contact Lou Olmos, Water Research Associates, 12233 West Olympic Boulevard, Suite 152, Los Angeles, CA 90064. (213)207-8277.

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A short course on **Integrated Impact Assessment in Water Resources** is offered May 15-26, 1989 at the Department of Civil Engineering, Colorado State University, Fort Collins, Colorado. This seminar is intended for water resources managers and engineers who are interested in or are responsible for requisite impact assessment or forecasting of direct and indirect impacts of major projects. For course details and costs, contact Janet Lee Montera, Manager, Conference Section, Department of Civil Engineering, Colorado State University, Fort Collins, CO 80523. (303)491-7425.

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The **Third International Great Lakes/St. Lawrence Mayors' Conference** will be held in Niagara Falls, Ontario on May 17-19, 1989.

Proposed session topics tentatively include: tourism, travel and outdoor recreation; the Great Lakes as a selling point in business and industry location decisions; the Great Lakes economy; resource management and environmental quality; Great Lakes/St. Lawrence transportation issues; and a Congressional/Parliamentary panel session.

For further information contact Cathy Chown at the Great Lakes Commission, The Argus II Building, 400 South, Fourth Street, Ann Arbor, MI 48103-4816. (313)665-9135.

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The American Bar Association's Standing Committee on the Environment will hold its 18th annual conference on May 19-20, 1989 at the Airlie House in Warrenton, Virginia. This year's focus will be on **Environmental Compliance — Is the System Working?**. Through speakers and panel discussions, the conference will explore the systems through which environmental regulatory requirements are imposed and compliance with them is implemented, as well as an evaluation of how the systems are working.

Contact Bernadette Higgins or Elissa Lichtenstein at American Bar Association, 1800 M Street NW, Washington, DC 20036 or call (202)331-2276 for further information.

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The **Fourth World Congress on the Conservation of the Built and Natural Environments** will be held at the University of Toronto on May 23-27, 1989. The conference will address conservation and industrial development issues, and is organized by the Heritage Trust. Registration materials are available from Dimensional Travel Incentives Limited, 2 St. Clair Avenue West, Suite 1108, Toronto, ON M4V 1L5. (416)963-8900.

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The University of Wisconsin Water Chemistry Program will host the **32nd Annual Conference on Great Lakes Research** and the annual meeting of the International Association for Great Lakes Research on May 30 to June 2, 1989 on the University's Madison, Wisconsin campus. This year's conference theme is problem solving, and includes lake level regulation, gull, tern and waterfowl management, exotic species in large lakes and ecosystem health assessment of contaminant effects.

For further information on the conference contact Gary Glass, U.S. EPA, 6201 Congdon Boulevard, Duluth, MN 55804. (218)720-5526.

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A participatory workshop designed to develop recommended solutions to urban waterfront public access issues will be held at the Hyatt Regency Hotel on the Chicago River in Chicago, Illinois on June 8 to 10, 1989. The symposium, **Getting to the Waterfront — Solutions to Public Access Issues for the Urban Waterfront** is cosponsored by the Waterfront Center and Friends of the Chicago River.

For further information contact Susan Kirk at the Waterfront Center, 1536 44th Street NW, Washington, DC 20007, (202)337-0356 or Alison Zehr, Friends of the Chicago River at (312)939-0490.

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**Sustainable Water Resources for the Future** is the theme for the 42nd Annual Conference of the Canadian Water Resources Association to be held at the Chateau Halifax in Halifax, Nova Scotia

on June 19-21, 1989.

Presentations will focus on the following themes: the value and pricing of water; water quality problems; implications of water export; and resource management challenges for the 1990s. A Canadian Committee on Irrigation and Drainage (CANCID) will also hold a session on the **Effects of Intensive Agriculture on Groundwater** at the conference.

For general and program information, contact Marc Sheeran, CWRA Conference '89, Environment Canada, Fourth floor, Queen Square, 45 Alderney Drive, Dartmouth, NS B2Y 2N6, (902)426-4197 or Elizabeth Langley at the same address, telephone (902)426-2132.

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The International Association for Impact Assessment will be holding its Eighth Annual Meeting in Montreal, Quebec on June 24-28, 1989. Within the context of the theme, **Impact Assessment in an Age of Transformation: New Imperatives, New Approaches**, sessions will be organized on the following: substantive issues; methods, techniques and application; institutional arrangements and teaching and training. Special emphasis will be placed on the call for greater collaborative action between developed and developing regions and nations.

For further information contact Dr. Victor C. Goldbloom, Program Chair, IAIA '89, Bureau d'audiences publiques sur l'environnement, Gouvernement du Québec, 5199, rue Sherbrooke est, bureau 3860, Montréal, PQ H1T 3X9. (514)873-7790.

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The World Future Society's **Sixth General Assembly and Exposition** will be held at the Sheraton Washington Hotel in Washington, DC from July 16-20, 1989. The program structure is clustered into six broad "spheres": biosphere, sociosphere, technosphere, econosphere, politisphere and futuresphere.

Registration and information is available from the World Future Society, 4916 Saint Elmo Avenue, Bethesda, MD 20814. (301)656-8274.

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A call for papers has been issued for the **Oceans '89** international conference on the global ocean to be held September 18-21, 1989 in Seattle, Washington.

Original papers are invited on marine-related topics, including methods for assessing the global ocean, methods and technologies for exploring and working in the global ocean, and related issues.

For further information contact Oceans '89 Program Coordinator, Nancy Penrose, Applied Physics Laboratory, 1013 N.E. 40th Street, Seattle, WA 98105. (206)254-3445.

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FOCUS
On International Joint Commission Activities
IJC Great Lakes Regional Office
100 Ouellette Ave.
Windsor, Ontario N9A 6T3